CLAIMS

We claim:

1. An isolated nucleic acid molecule encoding a fusion protein which activates transcription, the fusion protein comprising a first polypeptide comprising a DNA binding domain operatively linked to a second polypeptide comprising a transcriptional activation domain, wherein the transcriptional activation domain comprises at least one copy of a mutated acidic region of herpes simplex virus virion protein 16 (HSV VP16), the mutated acidic region consisting of amino acid positions 436 to 447 of HSV VP16 and having an amino acid substitution at position 442 as compared to wild type HSV VP16.

2. The nucleic acid molecule of claim 1, wherein the mutated acidic region of HSV VP16 has the amino acid sequence of SEQ ID NO: 2.

3. The nucleic acid molecule of claim 1, wherein the mutated acidic region of HSV VP16 has the amino acid sequence of SEQ ID NO: 3.

4. The nucleic acid molecule of claim 1, wherein the transcriptional activation domain comprises the amino acid sequence of SEQ ID NO: 4.

5. The nucleic acid molecule of claim 1, wherein the transcriptional activation domain comprises the amino acid sequence of SEQ ID NO: 5.

6. The nucleic acid molecule of claim 1, wherein the transcriptional activation domain comprises the amino acid sequence of SEQ ID NO: 6.

7. The nucleic acid molecule of claim 1, wherein the transcriptional activation domain comprises the amino acid sequence of SEQ ID NO: 7.

8. The nucleic acid molecule of claim 1, wherein the transcriptional activation domain comprises the amino acid sequence of SEQ ID NO: 8.

9. The nucleic acid molecule of claim 1, wherein the first polypeptide is a Tet repressor.

10. The nucleic acid molecule of claim 1, wherein the first polypeptide is a mutated Tet repressor that binds to *tet*O sequences in the presence, but not in the absence, of tetracycline or a tetracycline analogue.

11. The nucleic acid molecule of claim 1, wherein first polypeptide is selected from the group consisting of GAL4, LexA, LacR and steroid hormone receptors.

12. An isolated nucleic acid molecule encoding a fusion protein which activates transcription, the fusion protein comprising a first polypeptide comprising a DNA binding domain operatively linked to a second polypeptide comprising a transcriptional activation domain, wherein the transcriptional activation domain consists of three copies of an acidic region of herpes simplex virus virion protein 16 (HSV VP16), the acidic region consisting of amino acid positions 436 to 447 of HSV VP16 (SEQ ID NO:1).

13. The nucleic acid molecule of claim 12, wherein the first polypeptide is a Tet repressor.

14. The nucleic acid molecule of claim 12, wherein the first polypeptide is a mutated Tet repressor that binds to *tet*O sequences in the presence, but not in the absence, of tetracycline or a tetracycline analogue.

15. The nucleic acid molecule of claim 12, wherein first polypeptide is selected from the group consisting of GAL4, LexA, LacR and steroid hormone receptors.

16. An isolated nucleic acid molecule encoding a fusion protein which activates transcription, the fusion protein comprising a first polypeptide comprising a DNA binding domain operatively linked to a second polypeptide comprising a transcriptional activation domain, wherein the transcriptional activation domain consists of four copies of an acidic region of herpes simplex virus virion protein 16 (HSV VP16), the acidic region consisting of amino acid positions 436 to 447 of HSV VP16 (SEQ ID NO:1).

17. The nucleic acid molecule of claim 16, wherein the first polypeptide is a Tet repressor.

18. The nucleic acid molecule of claim 16, wherein the first polypeptide is a mutated Tet repressor that binds to *tet*O sequences in the presence, but not in the absence, of tetracycline or a tetracycline analogue.

19. The nucleic acid molecule of claim 16, wherein first polypeptide is selected from the group consisting of GAL4, LexA, LacR and steroid hormone receptors.

20. A recombinant vector comprising the nucleic acid molecule of claim 1 in a form suitable for expression of the fusion protein in a host cell.

21. A recombinant vector comprising the nucleic acid molecule of claim 12 in a form suitable for expression of the fusion protein in a host cell.

22. A recombinant vector comprising the nucleic acid molecule of claim 16 in a form suitable for expression of the fusion protein in a host cell.

23. A host cell comprising the vector of claim 20.

24. A host cell comprising the vector of claim 21.

25. A host cell comprising the vector of claim 22.

26. A fusion protein which activates transcription, wherein the fusion protein is encoded by the nucleic acid molecule of claim 1.

27. A fusion protein which activates transcription, wherein the fusion protein is encoded by the nucleic acid molecule of claim 12.

28. A fusion protein which activates transcription, wherein the fusion protein is encoded by the nucleic acid molecule of claim 16.

29. A non-human transgenic organism comprising a transgene comprising the nucleic acid molecule of claim 1 in a form suitable for expression of the fusion protein in cells of the non-human transgenic organism.

30. A non-human transgenic organism comprising a transgene comprising the nucleic acid molecule of claim 12 in a form suitable for expression of the fusion protein in cells of the non-human transgenic organism.

31. A non-human transgenic organism comprising a transgene comprising the nucleic acid molecule of claim 16 in a form suitable for expression of the fusion protein in cells of the non-human transgenic organism.